

Is Postpartum Depression a Disease of Modern Civilization?

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In the current issue of *The New Yorker*, Elizabeth Kolbert describes her family's brief and not entirely successful experiment with the Paleolithic diet. Her account is humorous, but it also explores some of the science underlying this popular style of eating, which basically avoids everything but meat, tubers and fresh fruits and vegetables. The idea behind "Paleo" meals and menus is to get back to the healthier diet that our ancient ancestors consumed before the advent of agriculture, which has led to all sorts of dietary and lifestyle changes—and to a host of modern diseases.

The experts call these diseases "mismatch diseases," because they result from a mismatch between our genes and our culture. Since farming took over, human culture has evolved much more rapidly than human genes, and as a result we are a biologically ancient people living in a modern world—and eating modern food. Obesity, heart disease, Type 2 diabetes—these are all the consequence of eating and living in a way that early humans would not have recognized.

There may be another mismatch disease—one not previously recognized. According to Chapman University psychological scientist Jennifer Hahn-Holbrook, postpartum depression may also be a consequence of the same dramatic cultural shifts—that is, it may be a disease of modern civilization. Working with UCLA's Martie Haselton, Hahn-Holbrook has been exploring the evidence from diverse sources to argue that postpartum depression is linked to early weaning, deficient diet, inactivity, not enough sunshine, and lack of family support.

Postpartum depression is not rare. Indeed, fully 13 percent of women worldwide get clinically depressed during the three months following childbirth. Yet evolutionary biologists have long been puzzled about why this disorder exists at all. Hahn-Holbrook and Haselton believe that the body's inflammatory processes may be to blame, and further, that this inflammation is tied to discontinuities between hunter-gatherer adaptations and modern life.

Start with food. The Paleo adepts have it right, basically. Studies of human remains indicate that the pre-agricultural human diet consisted of equal parts wild meat, starchy tubers and fresh fruits and veggies—a diet rich in essential micronutrients, fiber and fatty acids. But the agricultural revolution, about 10,000 years ago, allowed our ancestors to replace much of this diet with grains, which were easier to store. The consequence is that the modern western diet is lacking in organ meats, which our forebears loved, and therefore low in omega-3 fatty acids, the "good fats" that fight inflammation. The meat that we do eat tends to be muscle meat, from grain-fed livestock, which lacks this good fat—creating a "good fat gap" that is exacerbated by pregnancy and lactation.

The link to postpartum depression? Diet supplements supplying omega-3 fatty acids has been shown effective in treating depression. Plus postpartum depression is negatively linked to the consumption of seafood, high in these fatty acids. Other dietary discontinuities might be linked to postpartum depression as well—notably, carb and sugar-rich diets and overeating, all linked to chronic inflammation and

depression.

Or consider breastfeeding. Hahn-Holbrook and Haselton marshal evidence that this ancient mammalian adaptation dramatically alters maternal hormones—especially oxytocin and prolactin—in ways that help mothers with postpartum adjustment. Both human and animal studies show that lactating mothers have a reduced inflammatory reaction to stress, and reduced incidence of health problems in both infants and mothers. Plus women who breastfeed, compared with women who use formula exclusively, have lower incidence of depressive symptoms. All this leads the scientists to suspect that modern rates of postpartum depression could, at least in part, be a consequence of mothers confronting the challenges of new motherhood without the stress-regulating benefits of breastfeeding.

The scientists report similar evidence for the anti-depression benefits of both exercise and exposure to the sun—both of which our ancestors got a lot more of than mothers do today. Exercise influences chronic inflammation, insulin resistance, and neurotransmitter levels, all of which change during pregnancy and lactation. What's more, prescribed exercise has been shown to reduce rates of postpartum depression. Sunlight provides vitamin D, which acts on the immune system and diminishes inflammation. Yet modern humans are largely sheltered from the sun and from this important nutrient.

Finally, Hahn-Holbrook and Haselton believe that evolved family structure is contributing to modern rates of postpartum depression. Hunter-gatherer families lived in kin groups, with aunts, grandparents and older siblings to assist mothers with the youngest children. But today's families are spread out and, in addition, modern families have few children spaced closer together—all of which adds up to a greater childcare burden for modern mothers. Weak social support is one of the most consistent predictors of postpartum depression, the scientists say.

This compelling body of evidence, pulled together in a forthcoming issue of the journal *Current Directions in Psychological Science*, does not yet show that these modern changes actually cause postpartum depression. Nor are interventions to change these discontinuities always easy. That's for the future. But meanwhile, this common malady is costly, disrupting parenting, marriages and ultimately young children's lives.

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